

SEQUENCE LISTING

<110> Sumitomo Chemical Co., Ltd

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<120> PROCESS FOR PRODUCING OPTICALLY ACTIVE 4-HALO-3-HYDROXYBUTANOATE

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<170> PatentIn Ver. 2.1

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   ggctttggta ccttcgctag tgaaggttcc aagggcgaga cctatactgc tgcaccact 180
   gccctgaaga ccggttaccg tcacttggac tgtgcctggt actacctgaa cgagggtgag 240
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	Ala Pro Lys Gly Ile Arg Val Asn Asn Ile Gly Pro Gly Ala Ile Asn	
	180 185 190	
20	aca ccg att aac gct gag aaa ttt gct gat cct gag cag cgt gca gat	624
	Thr Pro Ile Asn Ala Glu Lys Phe Ala Asp Pro Glu Gln Arg Ala Asp	
	195 200 205	
25	gta gaa agc atg att cca atg gga tac att gga gag ccg gaa gaa att	672
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35 40 45

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Cys Ala Trp Tyr Tyr Leu Asn Glu Gly Glu Val Gly Glu Gly Ile Arg
50 55 60

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Asp Phe Leu Lys Glu Asn Pro Ser Val Lys Arg Glu Asp Ile Phe Val
65 70 75 80

tgc acc aag gtg tgg aac cac ctc cac cgt tat gag gac gtc ctc tgg 288
Cys Thr Lys Val Trp Asn His Leu His Arg Tyr Glu Asp Val Leu Trp
85 90 95

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Ser Ile Asp Asp Ser Leu Lys Arg Leu Gly Leu Asp Tyr Val Asp Met
100 105 110

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Phe Leu Val His Trp Pro Ile Ala Ala Glu Lys Asn Gly Gln Gly Glu
115 120 125

40 ccc aag att ggc cct gac ggc aaa tac gtc att ctc aag gac ctg acc 432
Pro Lys Ile Gly Pro Asp Gly Lys Tyr Val Ile Leu Lys Asp Leu Thr
130 135 140

gag aac ccc gag ccc aca tgg cgc gct atg gag aag att tat gag gat 480

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20	ccc aag att ggc cct gac ggc aaa tac gtc att ctc aag gac ctg acc	432
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	130 135 140	
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30	gag aag atg tcc aag ttc gcc aag gtc atg cct cac gcc aac cag atc	576
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35	gag att cac ccc ttc ctg ccc aac gag gag ctg gtg cag tac tgc ttc	624
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	195 200 205	
40	tcc aag aac att atg ccc gtg gcc tac tct cct ctg ggc tcg cag aac	672
	Ser Lys Asn Ile Met Pro Val Ala Tyr Ser Pro Leu Gly Ser Gln Asn	
	210 215 220	
	cag gtt ccc acc acc ggt gag cgg gtc agc gag aac aag act ctg aac	720

Gln Val Pro Thr Thr Gly Glu Arg Val Ser Glu Asn Lys Thr Leu Asn
225 230 235 240

5 gag atc gcc gag aag ggc ggc aac acc ctt gct cag gtt ctt att gcc 768
Glu Ile Ala Glu Lys Gly Gly Asn Thr Leu Ala Gln Val Leu Ile Ala
245 250 255

10 tgg ggt ctg cgc cgt ggc tac gtc gtt ctc ccc aag agc tcc aac ccc 816
 Trp Gly Leu Arg Arg Gly Tyr Val Val Leu Pro Lys Ser Ser Asn Pro
 260 265 270

aag cgc att gag tcc aac ttc aag agc att gag ctc tcc gat gcc gac 864
Lys Arg Ile Glu Ser Asn Phe Lys Ser Ile Glu Leu Ser Asp Ala Asp
275 280 285

ttt gaa gcc atc aat gcc gtt gcc aag ggt cgt cac ttc cgt ttc gtc 912
 Phe Glu Ala Ile Asn Ala Val Ala Lys Gly Arg His Phe Arg Phe Val
 290 295 300

20 aac atg aag gat act ttc gga tat gat gtc tgg ccc gag gag acc gcc 960
Asn Met Lys Asp Thr Phe Gly Tyr Asp Val Trp Pro Glu Glu Thr Ala
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25 aag aac ctg tct gcg tga 978
Lys Asn Leu Ser Ala
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 <213> Artificial Sequence

35 <220>
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for PCR

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<212> PRT
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35 Thr Ala Ala Gly Val Cys His Ser Asp Asp Phe Ile Met Ser Leu Pro
35 40 45

Glu Glu Gln Tyr Thr Tyr Gly Leu Pro Leu Thr Leu Gly His Glu Gly
50 55 60

	Ala Gly Lys Val Ala Ala Val Gly Glu Gly Val Glu Gly Leu Asp Ile	
	65	70 75 80
5	Gly Thr Asn Val Val Val Tyr Gly Pro Trp Gly Cys Gly Asn Cys Trp	
		85 90 95
	His Cys Ser Gln Gly Leu Glu Asn Tyr Cys Ser Arg Ala Gln Glu Leu	
		100 105 110
10	Gly Ile Asn Pro Pro Gly Leu Gly Ala Pro Gly Ala Leu Ala Glu Phe	
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	Met Ile Val Asp Ser Pro Arg His Leu Val Pro Ile Gly Asp Leu Asp	
15		130 135 140
	Pro Val Lys Thr Val Pro Leu Thr Asp Ala Gly Leu Thr Pro Tyr His	
		145 150 155 160
20	Ala Ile Lys Arg Ser Leu Pro Lys Leu Arg Gly Gly Ser Tyr Ala Val	
		165 170 175
	Val Ile Gly Thr Gly Gly Leu Gly His Val Ala Ile Gln Leu Leu Arg	
		180 185 190
25	His Leu Ser Ala Ala Thr Val Ile Ala Leu Asp Val Ser Ala Asp Lys	
		195 200 205
	Leu Glu Leu Ala Thr Lys Val Gly Ala His Glu Val Val Leu Ser Asp	
30		210 215 220
	Lys Asp Ala Ala Glu Asn Val Arg Lys Ile Thr Gly Ser Gln Gly Ala	
		225 230 235 240
35	Ala Leu Val Leu Asp Phe Val Gly Tyr Gln Pro Thr Ile Asp Thr Ala	
		245 250 255
	Met Ala Val Ala Gly Val Gly Ser Asp Val Thr Ile Val Gly Ile Gly	
		260 265 270
40	Asp Gly Gln Ala His Ala Lys Val Gly Phe Phe Gln Ser Pro Tyr Glu	
		275 280 285

	Ala Ser Val Thr Val Pro Tyr Trp Gly Ala Arg Asn Glu Leu Ile Glu	
	290 295 300	
5	Leu Ile Asp Leu Ala His Ala Gly Ile Phe Asp Ile Gly Gly Gly Asp	
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	325 330 335	
10	Asn Ala Gln Arg Pro Cys Gly Cys Gly Pro Trp Ser Val Val Pro Thr	
	340 345 350	
	Ala Val Glu Arg Gln Arg Lys Asn Thr Asp Ala Arg Pro Asn Ser Ile	
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	gag att ccc aaa ccc gag ccc ggt cca ggt gaa gtg ctc ctg gaa gtc	96
40	Glu Ile Pro Lys Pro Glu Pro Gly Pro Gly Glu Val Leu Leu Glu Val	
	20 25 30	
	acc gct gct ggc gtc tgc cac tcg gac gac ttc atc atg agc ctg ccc	144

	Thr	Ala	Ala	Gly	Val	Cys	His	Ser	Asp	Asp	Phe	Ile	Met	Ser	Leu	Pro	
			35					40					45				
5	gaa	gag	cag	tac	acc	tac	ggc	ctt	ccg	ctc	acg	ctc	ggc	cac	gaa	ggc	192
	Glu	Glu	Gln	Tyr	Thr	Tyr	Gly	Leu	Pro	Leu	Thr	Leu	Gly	His	Glu	Gly	
			50				55					60					
10	gca	ggc	aag	gtc	gcc	gcc	gtc	ggc	gag	ggt	gtc	gaa	ggt	ctc	gac	atc	240
	Ala	Gly	Lys	Val	Ala	Ala	Val	Gly	Glu	Gly	Val	Glu	Gly	Leu	Asp	Ile	
		65				70					75					80	
15	gga	acc	aat	gtc	gtc	gtc	tac	ggg	cct	tgg	ggt	tgc	ggc	aac	tgt	tgg	288
	Gly	Thr	Asn	Val	Val	Val	Tyr	Gly	Pro	Trp	Gly	Cys	Gly	Asn	Cys	Trp	
					85					90					95		
	cac	tgc	tca	caa	gga	ctc	gag	aac	tat	tgc	tct	cgc	gcc	caa	gaa	ctc	336
	His	Cys	Ser	Gln	Gly	Leu	Glu	Asn	Tyr	Cys	Ser	Arg	Ala	Gln	Glu	Leu	
				100				105						110			
20	gga	atc	aat	cct	ccc	ggt	ctc	ggt	gca	ccc	ggc	gcg	ttg	gcc	gag	ttc	384
	Gly	Ile	Asn	Pro	Pro	Gly	Leu	Gly	Ala	Pro	Gly	Ala	Leu	Ala	Glu	Phe	
			115				120					125					
25	atg	atc	gtc	gat	tct	cct	cgc	cac	ctt	gtc	ccg	atc	ggt	gac	ctc	gac	432
	Met	Ile	Val	Asp	Ser	Pro	Arg	His	Leu	Val	Pro	Ile	Gly	Asp	Leu	Asp	
		130					135					140					
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	Pro	Val	Lys	Thr	Val	Pro	Leu	Thr	Asp	Ala	Gly	Leu	Thr	Pro	Tyr	His	
		145				150					155					160	
35	gcg	atc	aag	cgt	tct	ctg	ccg	aaa	ctt	cgc	gga	ggc	tgc	tac	gcg	gtt	528
	Ala	Ile	Lys	Arg	Ser	Leu	Pro	Lys	Leu	Arg	Gly	Gly	Ser	Tyr	Ala	Val	
				165				170						175			
	gtc	att	ggt	acc	ggc	ggt	ctc	ggc	cac	gtc	gct	att	cag	ctc	ctc	cgc	576
	Val	Ile	Gly	Thr	Gly	Gly	Leu	Gly	His	Val	Ala	Ile	Gln	Leu	Leu	Arg	
				180				185						190			
40	cac	ctc	tgc	gcg	gca	acg	gtc	atc	gct	ttg	gac	gtg	agc	gcg	gac	aag	624
	His	Leu	Ser	Ala	Ala	Thr	Val	Ile	Ala	Leu	Asp	Val	Ser	Ala	Asp	Lys	
			195				200						205				

	ctc gaa ctg gca acc aag gta ggc gct cac gaa gtg gtt ctg tcc gac	672
	Leu Glu Leu Ala Thr Lys Val Gly Ala His Glu Val Val Leu Ser Asp	
	210 215 220	
5	aag gac gcg gcc gag aac gtc cgc aag atc act gga agt caa ggc gcc	720
	Lys Asp Ala Ala Glu Asn Val Arg Lys Ile Thr Gly Ser Gln Gly Ala	
	225 230 235 240	
10	gca ttg gtt ctc gac ttc gtc ggc tac cag ccc acc atc gac acc gcg	768
	Ala Leu Val Leu Asp Phe Val Gly Tyr Gln Pro Thr Ile Asp Thr Ala	
	245 250 255	
15	atg gct gtc gcc ggc gtc gga tca gac gtc acg atc gtc ggg atc ggg	816
	Met Ala Val Ala Gly Val Gly Ser Asp Val Thr Ile Val Gly Ile Gly	
	260 265 270	
20	gac ggc cag gcc cac gcc aaa gtc ggg ttc ttc caa agt cct tac gag	864
	Asp Gly Gln Ala His Ala Lys Val Gly Phe Phe Gln Ser Pro Tyr Glu	
	275 280 285	
25	gct tog gtg aca gtt ccg tat tgg ggt gcc cgc aac gag ttg atc gaa	912
	Ala Ser Val Thr Val Pro Tyr Trp Gly Ala Arg Asn Glu Leu Ile Glu	
	290 295 300	
30	ttg atc gac ctc gcc cac gcc ggc atc ttc gac atc ggc ggt gga gac	960
	Leu Ile Asp Leu Ala His Ala Gly Ile Phe Asp Ile Gly Gly Gly Asp	
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35	ott cag tot cga caa cgg tgc cga agc gta tcg acg act ggc tgc cgg	1008
	Leu Gln Ser Arg Gln Arg Cys Arg Ser Val Ser Thr Thr Gly Cys Arg	
	325 330 335	
40	aac gct cag cgg ccg tgc ggt tgt ggt ccc tgg tct gta gta ccg aca	1056
	Asn Ala Gln Arg Pro Cys Gly Cys Gly Pro Trp Ser Val Val Pro Thr	
	340 345 350	
45	gcg gta gaa cga cag cgg aaa aac act gat gcc cgg ccg aat tcg att	1104
	Ala Val Glu Arg Gln Arg Lys Asn Thr Asp Ala Arg Pro Asn Ser Ile	
	355 360 365	
50	cgg ccg ggc atc agt gtc aga aat tcg gtg tgc gct agc tgc acg cct	1152

Arg Pro Gly Ile Ser Val Arg Asn Ser Val Cys Ala Ser Cys Thr Pro
370 375 380

5 cga tga 1158
Arg
385